

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	41	356/241.4	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 11:46
2	BRS	L4	307	356/241.1	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 11:56
3	BRS	L5	346	1 or 4	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 11:56
4	BRS	L6	0	5 and ultraviolet and fiber near2 cable	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 11:57
5	BRS	L7	5	5 and ultraviolet and fiber	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 12:00

	Type	L #	Hits	Search Text	DBs	Time Stamp
6	BRS	L8	2	5 and ultraviolet and borescope	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 12:06
7	BRS	L9	0	5 and ultraviolet and bore near scope	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 12:01
8	BRS	L10	2	5 and ultraviolet and bore\scope	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 12:01
9	BRS	L11	96	eyepiece and borescope	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 12:07
10	BRS	L12	46	11 and optical near fiber	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 12:07

	Type	L #	Hits	Search Text	DBs	Time Stamp
11	BRS	L13	11	12 and switch	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/12/02 12:08

DERWENT-ACC-NO: 2002-173260
DERWENT-WEEK: 200271
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TITLE: Scope e.g. endoscope, has optical fibers arranged
in annular form at
one end of tube and annular light source to transmit light
to other insertion
end of tube

INVENTOR: PARIS, N J; ROBINSON, C P ; ROSS, I M ; HUH, M ;
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PATENT-ASSIGNEE: KEYMED MEDICAL & IND EQUIP LTD[KEYMN]

PRIORITY-DATA: 1999GB-0030784 (December 29, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
PAGES	MAIN-IPC	
EP 1241975 A1	September 25, 2002	E
000	A61B 001/07	
GB 2357856 A	July 4, 2001	N/A
013	G02B 023/26	
GB 2357856 B	December 19, 2001	N/A
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WO 200149164	July 12, 2001	E
000	A61B 001/07	
A1		

DESIGNATED-STATES: AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LU MC NL PT SE TR J
P US AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
TR

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO
APPL-DATE		
EP 1241975A1	N/A	2000EP-0987581
December 28, 2000		
EP 1241975A1	N/A	2000WO-GB05008
December 28, 2000		
EP 1241975A1	Based on	WO 200149164

N/A		
GB 2357856A	N/A	1999GB-0030784
December 29, 1999		
GB 2357856B	N/A	1999GB-0030784
December 29, 1999		
WO	N/A	2000WO-GB05008
December 28, 2000		
200149164A1		

INT-CL (IPC): A61B001/07; G02B023/26

ABSTRACTED-PUB-NO: GB 2357856A
 BASIC-ABSTRACT: NOVELTY - A tube (12) has a camera for photographing the image of an object and transmitting it to a viewing device (16). Multiple optical fibers (18) transmit light from gripping end of tube to insertion end of tube. The optical fibers are arranged in annular form at gripping end of the tube. A light source with light emitting diodes (20) is provided adjacent to the annular face of the fibers.

USE - Used as **borescopes** and endoscopes for viewing objects or organs in machine, body in remote or inaccessible locations.

ADVANTAGE - Filter wheel, drive motor and synchronization circuit are avoided by using red, green and **blue LEDs** which are operated sequentially to provide alternating red, green and blue light at the distal end of the endoscope. A monochrome camera is used to provide full color images. The endoscope arrangement is cheaper and compact. Light loss is reduced and interference between positioning of the components is avoided.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic perspective view of proximal end of **borescope**.

Tube 12

Viewing device 16

Optical fibers 18

Light emitting diodes 20

ABSTRACTED-PUB-NO: GB 2357856B

EQUIVALENT-ABSTRACTS: NOVELTY - A tube (12) has a camera for photographing the image of an object and transmitting it to a viewing device (16). Multiple optical fibers (18) transmit light from gripping end of tube to insertion end of tube. The optical fibers are arranged in annular form at gripping end of the tube. A light source with light emitting diodes (20) is provided adjacent to the annular face of the fibers.

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DESCRIPTION OF DRAWING(S) - The figure shows the schematic perspective view of proximal end of borescope.

Tube 12

Viewing device 16

Optical fibers 18

Light emitting diodes 20

CHOSEN-DRAWING: Dwg.1/2

TITLE-TERMS:

SCOPE ENDOSCOPE OPTICAL FIBRE ARRANGE ANNULAR FORM ONE END
TUBE ANNULAR LIGHT
SOURCE TRANSMIT LIGHT INSERT END TUBE

DERWENT-CLASS: P31 P81 S02 S05 U12 V07 W04

EPI-CODES: S02-J04B3C; S05-D04B; U12-A01; V07-N02; W04-M01;

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N2002-131646

US-PAT-NO: 5449919

DOCUMENT-IDENTIFIER: US 5449919 A

TITLE: **Borescope** drill pipe and light guide sleeve

----- KWIC -----

A **borescope** for inspecting the inside of bores such as drill pipe bores includes an elongate shaft to extend into the pipe. The shaft has an optical eye for directing incident light from a light source toward an inside surface of the bore and a receptor to receive emitted light therefrom. The shaft may be rotated eccentrically about the bore axis so that the distance of the optical eye from a sector of the interior surface to be inspected is always less than the radius of the bore.

This invention relates to apparatus for inspecting the interior wall of a pipe or bore. Such apparatus is frequently referred to as "**borescope**" and will be referred to as such herein.

Borescopes are used for inspection of the interior surface of all types of bore such as bore holes for wells or for mining or the interior bores of pipes. They generally utilize the principle of directing light towards an inner reflecting surface of a bore to be inspected, and monitoring reflected light therefrom. Examples of borescopes **utilizing** this principle are disclosed in U.S. Pat. No. 4,732,474 to Chikama issued Mar. 22, 1988 and in U.S. Pat. No. 5,088,819 to Storz issued Feb. 18, 1992, U.S. Pat. No. 4,967,092 to Fraignier et al issued Oct. 30, 1990 and in U.S. Pat.

No. 4,657,387 to Heising et al issued Apr. 14, 1987. The general principle is also utilized in apparatus for inspecting any reflecting surface. Thus endoscopes for surgically inspecting interior parts of the body cavity of humans and animals may utilize this principle as, for instance, in the endoscopes of U.S. Pat. Nos. 4,241,729 and 3,294,085.

Known borescopes may comprise an optical probe located at the distal end region of an elongate rod or sleeve which is capable of being projected into the bore to be inspected. The probe may be connected to a monitor at the proximal end of the rod or sleeve outside the bore. Light from the probe is directed towards the wall of the bore and reflected light signals are transmitted to the monitor. The longitudinal position of the probe within the bore may be adjustable.

The shaft may be a sleeve and the incident light transmission means and the emitted light transmission means are located inside the sleeve. Conveniently the light source may be a source of ultraviolet light and the incident light transmission means and the emitted light transmission means are optical fibres.

A shaft 24 extends into the drill pipe 10 through the spigot 12, the plate 16 and platform 20 of mounting 18. The shaft 24 comprises a sleeve carrying light transmission connectors 26 between an optical eye 28 at a lower end 30 of the shaft 24, and on the one hand, and a light source 32 and, on the other hand a monitor 34. The optical eye 28 is attached to the end 30 of shaft 24 to direct a beam incident light towards a sector of the interior surface of drill pipe 10 generally normal to the surface. Suitably the light is

ultraviolet light

(although white light can be used) which, when directed at the internal surface of a pipe which has been treated with a fluorescent dye or magnetic fluorescent particles, causes fluorescence when the dye concentrates e.g. in flaws or defects. This may provide a very clear visual image. It is, however, important that the optical eye is a set distance from the surface to be inspected. The eye is located to receive emitted light from the interior wall of drill pipe 10. The connections 26, which may be a liquid optic system or optical fibres, carry incident light from the optical source 32 to the optical eye and carry emitted light from the optical eye to the monitor 34 which may be an eyepiece or camera.

Eccentric 38 comprises a disc 39 rotatable on bushing 40 and having an offset bearing aperture 41 through which shaft 24 passes. Bushing 40 holds the shaft 24 of the **borescope** and is tightenable by means of compression ring 46. Thus disc 39 is able to rotate coaxially about the axis of drill pipe 10 so that bearing aperture 41 describes a circle about the axis of drill pipe 10. When shaft 24 of disc 39 is located in bushing 40 of disc 39 and disc 39 is rotated, then the shaft 24 moves eccentrically about the axis of drill pipe 10. Thus, optical eye 28 on lower end 30 of shaft 24 will describe a circle around the axis of drill pipe 10. Optical eye 28 is arranged to direct incident light generally radially outwardly towards the inner wall of drill pipe 10.

The **borescope** may be adjusted longitudinally in the drill pipe by loosening compression ring 46 and sliding the **borescope** in bushing 40. A series of notches may be provided on the shaft of the **borescope**.

Each notch may be spaced from the next notch by the desired distance between the longitudinal viewings. The notches may be a visual guide or may engage a projection to automatically stop longitudinal movement after the desired distance has been covered.